DOCUMENT RESUME

ED 255 863 CS 007 962

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TITLE Prior Knowledge and the Reading Comprehension of Linguistically/Culturally Diverse Students.
PUB DATE 4 Apr 85
NOTE 21p.; Paper presented at the Annual Meeting of the American Educational Research Association (69th, Chicago, IL, March 31-April 4, 1985).
PUB TYPE Speeches/Conference Papers (150) -- Information Analyses (070)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Cultural Awareness; *Cultural Differences; Elementary Secondary Education; *Interference (Language); *Prior Learning; *Reading Comprehension; *Reading Instruction; Reading Research; Schemata (Cognition)

ABSTRACT

How background knowledge of the content of a text affects reading comprehension and the role it plays in the diagnosis and instruction of reading comprehension skills for linguistically/culturally diverse (L/CD) students may be demonstrated through schema theory. Since a schema represents what is believed to be generally true about a class of things, events, or situations, an individual's concepts about the world can also be discussed in terms of schema theory. Studies have provided evidence that background knowledge is important in reading comprehension, especially for L/CD students. Furthermore, the linguistic and cultural experiences of an individual play a crucial role in the development of the schematic knowledge store. The closer the match between the content schema used in writing the text and the schema chosen by the reader to interpret the text, the better the level of comprehension. L/CD students can be adversely affected in their reading assessment and instruction by materials for which they lack the appropriate background knowledge. Responsible educators must be aware of the linguistic and cultural diversity of their students, and should provide appropriate materials and methods. (DF)

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PRIOR KNOWLEDGE AND THE READING COMPREHENSION OF LINGUISTICALLY/CULTURALLY DIVERSE STUDENTS

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Paper presented at the annual meeting of

The American Educational Research Association

Chicago, April 4, 1985

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PRIOR KNOWLEDGE AND THE READING COMPREHENSION OF LINGUISTICALLY/CULTURALLY DIVERSE STUDENTS

Did you ever experience the frustration of not being able to understand something you've read, such as a car repair manual or directions for a new computer program? Sometimes these documents are poorly written but more often, readers lack the background knowledge that authors assume in writing such documents. This is what happens frequently to linguistically and culturally different students who are assigned reading material written in a language and for a culture that is not native to them.

It is the purpose of this paper to demonstrate, through schema theory, how background knowledge of the content of a text effects reading comprehension and the role it plays in the diagnosis and instruction of reading comprehension skills for linguistically/culturally diverse (L/CD) students. Related research will be presented followed by a theoretical model of the functions of schematic prior knowledge in the reading comprehension process. Finally, these research findings will be discussed in terms of the diagnosis and instruction of reading comprehension skills for students of diverse linguistic and cultural backgrounds. Specific methods and techniques will be offered.

Related Research

In 1979, Pearson, Hansen, and Gordon found that students with strong background knowledge about spiders

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comprehended implicit information from a spider story significantly better than students with weak spider knowledge by integrating their information with the information provided in the text. A study by Anderson, Spiro, and Anderson (1978) demonstrated that schemata also play a role in the learning and remembering of explicit text information. Subjects reading a restaurant narrative learned and recalled food items better than subjects reading a supermarket narrative because the restaurant schema provided more structure for the comprehension and recall of the food information.

A more culture-specific study compared the comprehension of American and Indian subjects in reading two letters about typical marriages, one American and one Indian (Steffensen, Joagdev & Anderson, 1979). Results revealed that subjects read their native passages more rapidly, recalled more information, and produced more culturally appropriate elaborations while producing more culturally based distortions of the foreign passages. Steffensen & Colker (1982) experienced similar results with Aboriginal/Australian and American women who heard and retold stories about illness and medical treatment, one story from each of their cultures. Subjects hearing native passages had culturally derived knowledge of the story content and so showed significantly superior comprehension and recall with appropriate elaborations.

Joselito Lalas (1982) found that bilingual Filipino

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high school and elementary school children interpreted a story about U.S. farming differently because the high school subjects had retained their farming schemata from their experiences in the Philippines while the younger subjects had already altered their farming schemata in accordance with their experiences in the new culture. Finally, in a review of current research on this topic, Joagdev, & Steffensen (1980) found that, in general, bicultural readers comprehend and remember materials that deal with their own culture better than those that deal with other cultures.

These studies provide evidence of the importance of prior knowledge in reading comprehension especially for L/CD students. If the content schemata of the author and the reader do not coincide to a reasonable degree, comprehension by the reader of the author's intended meaning will be severely limited and/or misinterpreted. This is particularly significant when the author and the reader have different cultural backgrounds because it increases the possiblility that their content schemata will be different, resulting in misinterpretations or that the reader will lack the appropriate background knowledge all together and fail to comprehend even at a minimal level.

A Theoretical Model

Through daily life experiences, an individual develops concepts about the world which can be discussed in terms of schema theory. "A schema represents generic knowledge; that is, it represents what is believed to be generally true of a

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class of things, events, or situations" (Anderson, 1977, p. 2). It is composed of a number of interrelated subschemata which are arranged in a hierarchical structure according to their relative importance to the concept. Each component part has a "slot" in the schema's structure.

The linguistic and cultural experiences of an individual play a crucial role in the development of the schematic knowledge store. Not only the types of concepts that are developed but also the way each concept is structured within the schema is determined by these background experiences. Consider the concept of snow as it would be developed in the knowledge store of an Alaskan Eskimo as opposed to that of an American Indian. Besides the concept differing in terms of its significance in the lives of these individuals, the depth and complexity of structure would obviously be greater for the Eskimo than for the Indian.

The goal of schema theory in descriptions of the reading comprehension process is "to specify how the reader's knowledge interacts and shapes the information on the page and to specify how that knowledge must be organized to support the interaction" (Adams & Collins, 1977, p.5). When authors write text, they draw upon their schematic prior knowledge of the topic giving greater importance to those components or subschemata high in this knowledge structure and less emphasis to those lower in the structure. When people begin to read text, the information presented

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calls up an appropriate schema from their knowledge store to be utilized in reading, understanding, and organizing the information for comprehension. As information is draw from the text, readers match it to corresponding "slots" in the structure of the schema. Through this process of "instantiation" (Adams & Collins, 1977), readers can understand, organize and integrate the new information into their knowledge stores and so "comprehend".

The closer the match between the content schema used by the author in writing the text and the schema chosen by the reader to interpret the text, the better the level of comprehension. The reverse would also be true. The reader who does not possess a schema relevant to the content of the text will have difficulty reading and comprehending the passage. Even if readers call upon their schemata that are closest to the content of the text, they may be so different in structure that the information slotted will not receive the importance intended by the author and a substantial amount of data may not be slotted at all.

Think of the American Indian trying to slot the information about snow written by the Alaskan Eskimo. The Indian's snow schema would be totally inadequate to organize and absorb the extensive snow concept of the Eskimo. The result would be a failure to comprehend the intended meaning of the text and an inability to recall data pertinent in terms of the author's intended meaning.

Another important aspect of this process is the

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slotting of information by "default". That is, information that is relevant to the schema but is not explicitly stated in the text can be slotted by using available data to make inferences about the missing data (Adams & Collins, 1977). As a number of studies indicated, when the readers' and the author's schemata do not coincide and such interpretations are made, "distortions" of the author's intended meaning result.

Anderson (1977) provides some hypotheses to explain the higher level of learning and recall of text information that occurs when the reader has a strong schematic prior knowledge of the content of a particular text. First, schemata provide a device which Anderson calls "ideational scaffolding" by which a reader allocates attention. Information which can be instantiated readily is viewed as important while unslotted information is unimportant. Things identified as relevant will be remembered and learned while superfluous information can be forgotten.

Anderson's "retrieval plan" hypothesis suggests that the schema provides a structure for searching memory. When the readers cannot immediately recall certain information, the schema can be used to systematically search the memory for the required data. Spiro (1977) suggests another hypothesis called "inferential reconstruction" which proposes that information which is missing from memory can be inferred from information recalled in combination with the relevant schema.

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The restaurant story used in Anderson's 1978 study provides a good illustration for the operation of these two processes. Imagine that the readers are trying to recall what the restaurant story characters drank with their meal. By using the retrieval mechanism, they systematically run through the schema to the section where the meal is actually being eaten and they recall that the characters are drinking wine but they cannot remember if it is red or white. However, knowing that they are eating steak, it can be inferred (inferential reconstruction) that the wine is red since red wine is usually served with steak. A reader that does not have a similar restaurant schema, however, would not be able to perform these operations, not for lack of ability, but for lack of the required background knowledge.

Although it is not possible at this time to verify these hypotheses, they provide some insight into the schema-related processes that might be used by young readers in school. They also reveal some of the handicaps that may be experience by L/CD students who lack the necessary background knowledge but, nevertheless, must demonstrate comprehension of text content in daily reading activities and or various reading achievement tests. L/CD readers lacking appropriate background knowledge may not be able to instantiate a significant amount of information or worse, may slot it incorrectly into a weakly-related schema resulting in an inability to learn and recall the data as required. In addition, their retrieval and reconstruction

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mechanisms, operating with inadequate schemata, may cause insufficient and/or inaccurate informtion to be recalled. All of these malfunctions, which are beyond the control of the L/CD reader, have nothing to do with their reading ability yet can cause poor reading comprehension performance and scores.

Particular attention should be paid to the case of standardized reading tests. In analyzing the reasons for not comprehending on one of these measures, it can be said that failure may be due to poor basic skills, a lack of world knowledge necessary to interpret the text, or a combination of both (Royer & Cunningham, 1978). The problem with current standardized reading tests is that they cannot distinguish between poor basic skills and lack of world knowledge as the cause of comprehension failure (Royer & Cunningham, 1978).

When you consider this information in combination with the fact that standardized reading tests are usually written to coincide with the world knowledge of the English-speaking majority culture, the potential bias against L/CD populations becomes more evident. Not only are standardized tests constructed in such a way that the likelihood of a gap between the world knowledge of the passages and the prior knowledge of L/CD students is very great (Adams & Collins, 1977) but they provide no means for determining the level of influence this factor has upon the test results (Johnston, 1981).

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Educational Implications

Theory and research related to schematic prior knowledge and reading comprehension have very clear implications for the reading diagnosis and instruction of L/CD students. First, if L/CD students are to experience success in their efforts to learn to read in English, at the very least, they must be given materials with content that falls within their background experiences.

Secondly, if we are to obtain accurate diagnosis of the reading abilities and needs of L/CD students, materials relevant to their background knowledge stores must be used so that any reading difficulties can be clearly attributed to an instructional need and not be confused with lack of appropriate background knowledge. This is particularly important when standardized tests are used to measure reading progress and analyze reading problems. Such tests are usually written for the majority population and, therefore, may include material that is outside the experiences of L/CD students. The results of such tests must be carefully interpreted so as to avoid academic decisions that are biased against minority students.

Finally, in order to further the English reading development of L/CD students, they must be helped to expand their background knowledge stores to new areas that can become sources for extending the content of their reading materials. Without growth in supportive background experiences, growth in reading ability will be hampered.

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Educational Techniques

Now some techniques for reading diagnosis and instruction will be offered that take account of the content of materials being used with L/CD students.

Diagnosis of Reading Ability and Instructional Needs

A- Informal Tests

In trying to determine the reading ability level and diagnose the instructional needs of L/CD students, informal tests are generally more efficient and reliable in terms of controlling the background knowledge variable. Either materials can be selected that are known to be within the students' experiential background or, if there is any doubt, students can be questioned beforehand about their knowledge of the topic.

One simple procedure is to select a few vocabulary words or phrases that are central to the meaning of the passage. Ask the students to define or tell what they know about each word or phrase. If they demonstrate background information that seems sufficient to understand the meaning of the passage to be read, then the testing can proceed. If not, different passages should be discussed until a suitable one is found.

This may seem to be a very arduous task to have to complete for each student. However, L/CD students' reading abilities and needs cannot adequately be determined unless the prior knowledge variable has been eliminated.

B- Standardized Tests

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From the point of view of prior knowledge of text content, it can be very risky to make any judgements about the reading ability or instructional needs of L/CD students based upon standardized tests unless one has some information about the students' knowledge of the content of the test passages. If standardized reading tests must be used for making such decisions, it may be helpful to use the passage vocabulary technique described above after the test is given and scored. This information can then be used in interpreting the test scores. If a substantial lack of prior knowledge is found, then it would be advisable to base ability and instructional decisions on some informal reading measure.

C- Dynamic Assessment of Reading Ability

Dynamic assessment assumes that cognitive behavior is modifiable and it attempts to identify the ideal conditions under which a child's learning ability can be changed (Feuerstein, Rand, & Hoffman, 1979). Cioffi and Carney (1983), in applying this concept to reading assessment, include the following activities in the administration of a reading test: introducing vocabulary words, monitoring children as they read, helping with difficult words, and asking or answering questions. The purpose of these activities is to determine the preferred conditions for the improvement of the students' reading ability as well as to identify their reading level at a given point in time.

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Using this dynamic approach to reading assessmert, not only would the examiner become aware of the students' level of knowledge of the text content but would be able to see how the student uses whatever knowledge is available in the comprehension of the passage. In addition, the examiner can attempt to relate the concepts in the text to the unique experiences of the students to see if this facilitates their ability to comprehend. Such a technique can be adapted for use with formal or informal testing devices.

Reading Instruction

The foremost concern with instruction is that reading and all the language arts should flow naturally from the students' communication experiences in daily life at home and school. Listening, speaking, reading and writing instruction should be integrated, purposeful and meaningful. They should not be taught in isolation nor in a vacuum. A rich learning environment must be created for L/CD students so that all of their language skills can be broadened through a wide range of experiences. Teachers must take advantage of every opportunity to expand the linguistic and cultural knowledge of their L/CD students. Field trips, newpaper reporting, guest speakers, plays, and related activities should all be pursued to create a dynamic yet natural language learning environment.

A- The Language Experience Approach to Communication Development (LEA)

The LEA is an ideal technique for the language

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instruction of L/CD students (Allen, 1976; Hall, 1978, 1981). By drawing directly from the language and experiences of the students to create printed materials, it integrates all of the language arts into naturally meaningful, purposeful activities. The resulting printed matter is an excellent source of linguistically and culturally relevant reading materials for use in the development of reading skills. For L/CD students, it assures that the content of materials is within their language and knowledge base and it extends the language and the content of materials as new experiences develop.

B- The Structured Reading Lesson

Although the LEA is an excellent approach to reading instruction for L/CD students, no single technique covers all bases. Therefore, the following suggestions apply to the adaptation of other reading approaches for L/CD populations.

Material Selection

Materials that reflect the linguistic and cultural backgrounds of the students are the most desireable for reading instruction. In order to make such a selection, it is imperative to become knowledgeable about the linguistic and cultural backgrounds of students. Class activities that involve the sharing of different aspects of the students' native languages and cultures as well as home life can be very helpful in getting to know them.

Since all students in a given class will not reflect

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the same language and culture, it is necessary to have available materials covering a wide range of topics. In this way, materials can be selected in accordance with the qualities and needs of the students. Inexpensive paperback books available in a broad range of topics and reading levels can usually be acquired for this purpose.

It would be very difficult to find a basal reading series that would suit the backgrounds of all the students in a given class. However, their use is often mandated by a school or district. In such cases, it may be possible to select stories from the series (or from a few different series) in accordance with students' background needs. An alternative would be to prepare the students to read those stories for which they lack the appropriate background knowledge. Techniques for such preparation will be suggested below.

Finally, student-made materials are an excellent source of reading matter for L/CD students. Stories written by the group or individuals about mutually shared experiences can provide appropriate and motivating materials for reading.

Preparation For Reading

Introducing the topic and new vocabulary words traditionally begin a reading lesson. However, studies have shown that, unless students already have some knowledge of the topic, such introductions are not sufficient to provide the background information required to comprehend effectively. In other words, talking about a topic is not

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enough unless students already have some background knowledge. A relevant schema cannot be produced nor can an inadequate schema be adjusted through a brief discussion.

If unfamiliar material is to be used, it is necessary to provide or simulate actual experiences related to the content of the text so that students have the appropriate information (schemata) to draw upon in reading and comprehending the text. Any similar experiences that the students might have had can be built upon and extented to encompass the new topic (schema adjustment). Therefore, another consideration in selecting materials should be whether or not the experience for a topic can be provided or simulated and/or how closely the topic parallels related experiences of the students.

Once it is clear that the students have the background information needed to read with comprehension, that they have a relevant schema to plug into, then instruction can proceed with confidence that reading skills can and will be developed. There is a significant amount of effort involved in selecting appropriate materials and preparing L/CD students to read but the alternative is taking the chance of confounding reading instruction by the background knowledge variable.

Conclusion

Prior knowledge research along with schema theory paint a very clear picture of how L/CD students can be adversely

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effected in their reading assessment and instruction by materials for which they lack the appropriate background knowledge. L/CD students may experience bias in reading assessment and undue frustration in reading instruction if the prior knowledge variable is not controlled. Responsible educators, administrators, and other related personnel must make every effort to eliminate these sources of bias and frustration by being aware of the linguistic and cultural diversity of their students and by using methods and materials that are account for the prior knowledge variable.

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